CLAIMS

Sub B1

1. Impact additive of the core/shell typ composed of a core based on alkyl or on a polyorganosiloxane rubber and a shell based on poly(alkyl methacrylate), or on a styrene-acrylonitrile copolymer, characterized in that the said impact additive comprises from:

a) 70% to 90% by weight of a crosslinked elastomeric core which is composed:

1) of 20% to 100% by weight, and preferably of 20% to 90%, of a nucleus composed of a copolymer (I) of n-alkyl acrylate, the alkyl group of which has a carbon number ranging from 5 to 12, or of a mixture of alkyl acrylates, the linear or branched alkyl group of which has a carbon number ranging from 2 to 12, or of a polyorganosiloxane rubber, of a polyfunctinoal crosslinking agent possessing unsaturated groups in its molecule, at least one of which is of $CH_2=C<$ vinyl tape, and optionally of a polyfunctional grafting agent possessing unsaturated groups in its molecule, at least one of which is of $CH_2=CH-CH_2-$ allyl type, the said nucleus containing a molar amount of crosslinking agent and optionally of grafting agent ranging from 0.05% to 5%,

2) of 80% to 0% by weight, and preferably of 80% to 10%, of a covering composed of a copolymer (II) of n-alkyl acrylate, the alkyl group of which has a carbon number ranging from 4 to 12, or of a mixture of alkyl acrylate as defined above in 1) and

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of a grafting agent possessing unsaturated groups in its mol cul , at least one of which is of $CH_2=CH-CH_2-$ allyl type, the said covering containing a molar amount of grafting agent ranging from 0.05 % to 2.5 %,

b) 30 % to 10 % by weight of a shell graft d onto the said core composed of a polymer of an alkyl methacrylate, the alkyl group of which has a carbon number ranging from 1 to 4, or alternatively of a statistical copolymer of an alkyl methacrylate, the alkyl group of which has a carbon number ranging from 1 to 4, and of an alkyl acrylate, the alkyl group of which has a carbon number ranging from 1 to 8, containing a molar amount of alkyl acrylate ranging from 5 % to 40 %, or alternatively composed of a styrene-acrylonitrile copolymer.

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2. A composition ~~Impact additive~~ according to Claim 1, characterized in that the said impact additive comprises from:

a) 75 % to 85 % of a crosslinked elastomeric core,

b) 25 % to 15 % of a shell grafted onto the said core.

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3. A composition ~~Impact additive~~ according to Claim 1 ~~either of Claims 1 and 2~~, characterized in that the alkyl group of the n-alkyl acrylate of the copolymer (I) has a carbon number ranging from 5 to 8 and that the alkyl group of th n-alkyl acrylat of the cop lymer (II) has

a carbon number ranging from 4 to 8.

4. ~~Impact additive~~ A composition according to ~~one of Claims 1 to 3~~ Claim 1, characterized in that the alkyl group of the alkyl acrylates of the mixture forming part of the copolymers (I) and/or (II) has a carbon number ranging from 4 to 8.

5. ~~Impact additive~~ A composition according to Claim 1, characterized in that the crosslinking agent is chosen from derivatives possessing at least two double bonds of $CH_2=C<$ vinyl type.

6. ~~Impact additive~~ A composition according to Claim 1, characterized in that the crosslinking agent is chosen from derivatives possessing one or a number of double bonds of vinyl type and at least one double bond of $CH_2=CH-CH_2-$ allyl type.

7. ~~Impact additive~~ A composition according to ~~either of Claims 1 and 5~~ Claim 1, characterized in that the crosslinking agent is 1,4-butanediol diacrylate.

8. ~~Impact additive~~ A composition according to ~~either of Claims 1 and 6~~ Claim 1, characterized in that the crosslinking agent is allyl acrylate or methacrylate.

9. ~~Impact additive~~ A composition according to Claim 1, characterized in that the grafting agent is chosen from derivatives possessing at least two double bonds of $CH_2=CH-CH_2-$ allyl type.

10. ~~Impact additive~~ A composition according to Claim 1, characterized in that the grafting agent is chosen from derivativ e possessing one or a number of double bonds

of allyl type and at 1 ast one double bond of vinyl type.

11. ~~Impact additive~~ A composition according to ~~either of Claims 1 and 9~~ Claim 1, characterized in that the grafting agent is diallyl maleate.

12. ~~Impact additive~~ A composition according to ~~either of Claims 1 and 10~~ Claim 1, characterized in that the grafting agent is allyl acrylate or methacrylate.

13. ~~Impact additive~~ A composition according to ~~one of Claims 1 to 12~~ Claim 1, characterized in that the nucleus of the crosslinked core has a molar amount of crosslinking agent and optionally of grafting agent of between 0.5 % and 1.5 %.

14. ~~Impact additive~~ A composition according to ~~one of Claims 1 to 4 and 10 to 12~~ Claim 1, characterized in that the covering of the crosslinked core has a molar amount of grafting agent of between 0.5 % and 1.5 %.

15. ~~Impact additive~~ A composition according to ~~one of Claims 1 to 4~~ Claim 1, characterized in that the statistical copolymer of the shell has a molar amount of alkyl acrylate of between 10 % and 20 %.

16. ~~Impact additive~~ A composition according to ~~either of Claims 1 and 3~~ Claim 1, characterized in that the n-alkyl acrylates used to form the copolymer (I) are n-pentyl acrylate, n-hexyl acrylate, n-heptyl acrylate and n-octyl acrylate.

17. ~~Impact additive~~ A composition according to ~~one of Claims 1 to 3~~ Claim 1, characterized in that the n-alkyl

acrylates used to form the copolymer (II) are n-butyl acrylate, n-pentyl acrylate, n-hexyl acrylate, n-heptyl acrylate and n-octyl acrylate.

B 18. ~~Impact additive~~ A composition according to Claim 16 B ~~and 17~~, characterized in that the n-alkyl acrylate for forming the copolymers (I) and (II) is n-pentyl acrylate.

B 19. ~~Impact additive~~ A composition according to Claim 16 B ~~and 17~~, characterized in that the n-alkyl acrylate for forming the copolymers (I) and (II) is n-hexyl acrylate.

B 20. ~~Impact additive~~ A composition according to Claim 16 B ~~and 17~~, characterized in that the n-alkyl acrylate for forming the copolymers (I) and (II) is n-heptyl acrylate.

B 21. ~~Impact additive~~ A composition according to Claim 16 B ~~and 17~~, characterized in that the n-alkyl acrylate for forming the copolymers (I) and (II) is n-octyl acrylate.

B 22. ~~Impact additive~~ A composition according to Claim 16 B ~~and 17~~, characterized in that the n-alkyl acrylate for forming the copolymer (I) is n-octyl acrylate and that the n-alkyl acrylate for forming the copolymer (II) is n-butyl acrylate.

B 23. Impact additive according to ~~one of~~ Claim 1 B ~~Claims 1 to 3~~, characterized in that the linear or branched alkyl acrylates constituting the mixture of alkyl acrylates used for forming the copolymers (I)

and/or (II) are ethyl acrylate, n-propyl acrylate, n-butyl acrylate, amyl acrylate, 2-methylbutyl acrylate, 2-ethylhexyl acrylate, n-hexyl acrylate, n-octyl acrylate, n-decyl acrylate, n-dodecyl acrylate and 3,5,5-trimethylhexyl acrylate.

24. ~~Impact additive~~ A composition according to Claim 23, characterized in that use is made of an amount by weight of n-alkyl acrylate at least equal to 10 % by weight of the mixture of alkyl acrylates.

25. ~~Impact additive~~ A composition according to Claim 24, characterized in that use is made of an amount by weight of n-alkyl acrylate of between 20 % and 80 % by weight of the mixture of alkyl acrylates.

26. ~~Impact additive~~ A composition according to ~~one of Claims 23 to 25~~ Claim 23, characterized in that the n-alkyl acrylate is n-octyl acrylate.

27. ~~Impact additive~~ A composition according to Claim 1 ~~or 2~~, characterized in that the alkyl methacrylate used to form the shell is methyl methacrylate.

28. Thermoplastic polymer composition containing an impact additive according to any one of Claims 1 to 27.

29. Composition according to Claim 28, characterized in that the thermoplastic polymer is composed of one or a number of polymers of the polycondensat s type, in particular poly sters, such as poly(butylene terephthalat), polyamides, p lyesteretheramid s, polycarbonat s and alloys f the

Sub B2 abovementioned polymers.

30. Composition according to Claim 28, characterized in that the thermoplastic polymer is composed of one or a number of polymers chosen from the group formed by poly(alkyl methacrylate)s and in particular poly(methyl methacrylate); optionally superchlorinated vinyl chloride homopolymers; the copolymers which result from the copolymerization of vinyl chloride with one or a number of ethylenically unsaturated comonomers and which contain at least 80 % by weight of polymerized vinyl chloride; 1,1-dichloroethylene homopolymer; or 1,1-difluoroethylene homopolymer.

B 31. ~~Composition~~ A composition according to Claim 30, characterized in that the thermoplastic polymer is a vinyl chloride homopolymer.

B 32. ~~Composition~~ A composition according to Claim 29, characterized in that the thermoplastic polymer is a poly(butylene terephthalate).

B 33. ~~Composition~~ A composition according to ~~one of Claims 28 to 32~~ Claim 28, characterized in that the content of impact additive is between 1 part and 30 parts by weight per 100 parts by weight of the thermoplastic polymer used.

B 34. ~~Composition~~ A composition according to Claim 33, characterized in that the content of impact additive is betw en 5 parts and 10 parts by weight per 100 parts by weight of th thermoplastic polymer used.

35. ~~Process for producing~~ B an impact additive

according to claim 1 comprises the preparation, ~~in~~ a first stage, of a crosslinked ~~elastomeric~~ core composed of a nucleus and of a ~~covering~~ and then, in a second stage, the grafting onto the said crosslinked elastomeric core of a shell made of poly(alkyl methacrylate).

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36. ~~Composition~~ A composition according to claim 30, characterized in that the thermoplastic polymer is a 1,1-trifluoroethylene homopolymer.

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37. An ~~impact additive~~ composition according to claim 1, wherein the core contains above 0 to 80% by weight of said covering.

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38. An ~~impact additive~~ composition according to claim 37, wherein the covering constitutes at least 5% by weight of said core.

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39. An ~~impact additive~~ composition according to claim 37, wherein the covering constitutes at least 10% by weight of said core.

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40. ~~An impact additive~~ A composition according to claim 1, wherein the core does not contain a covering.

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Add E'

Add I4